

CLAIMS

WHAT IS CLAIMED IS:

1. A method for producing multi-color concrete, comprising the steps of:
 - (a) providing a pigment water dispersion;
 - (b) providing a polymer binding agent;
 - (c) mixing the pigment water dispersion and the polymer binding agent to form a first spray color dispersion;
 - (d) discharging a wet concrete mix from a vessel;
 - (e) spraying the first spray color dispersion onto the wet concrete mix discharging from the vessel to form a pattern of applied color in the wet concrete mix; and
 - (f) forming a resultant structure of cured concrete.
2. The method for producing multi-color concrete according to claim 1, wherein the step of spraying includes using at least one nozzle to spray the first spray color dispersion under pressure.
3. The method for producing multi-color concrete according to claim 1, further including steps of providing a second pigment water dispersion, providing a second polymer binding agent, mixing the second pigment water dispersion and the second polymer binding agent to form a second spray color dispersion, and spraying the second spray color dispersion onto the wet concrete mix.

4. The method for producing multi-color concrete according to claim 3, wherein the steps of spraying comprise using a plurality of nozzles, wherein at least one nozzle of the plurality of nozzles sprays the first spray color dispersion and at least one nozzle of the plurality of nozzles sprays the second spray color dispersion.
5. The method for producing multi-color concrete according to claim 1, including the step of controlling a color pattern using timers that controls the step of spraying.
6. The method for producing multi-color concrete according to claim 5, wherein the step of controlling the color pattern includes spraying in pulses such that sprays of various lengths of time produce a desired pattern.
7. The method for producing multi-color concrete according to claim 1, wherein the step of spraying includes using at least one nozzle having a desired flow pattern.
8. The method for producing multi-color concrete according to claim 1, wherein the step of spraying including use of at least one nozzle includes using at least one nozzle that produces a pattern selected from the group consisting of a solid cone, a hollow cone, or a flat spray.
9. The method for producing multi-color concrete according to claim 1, wherein the step of spraying includes spraying in the form of a stream.

10. The method for producing multi-color concrete according to claim 1, wherein the step of spraying includes varying the distances between the at least one nozzle and the wet concrete mix.

11. A method for producing multi-color concrete, comprising the steps of:

- (a) providing a pigment water dispersion;
- (b) providing a polymer binding agent capable of integrally binding with wet concrete mix to form an irreversible integral structure of the pigment and the concrete;
- (c) mixing the pigment water dispersion and the polymer binding agent to form a first spray color dispersion;
- (d) discharging a wet concrete mix from a vessel;
- (e) spraying the first spray color dispersion onto the wet concrete mix discharging from the vessel to form a pattern of applied color in the wet concrete mix; and
- (f) forming a resultant structure of cured concrete;

whereby a resultant polymer structure is insoluble in water and remains as part of the cured concrete, thereby preserving the integrity of the pattern of applied color highlight.

12. The method for producing multi-color concrete according to claim 11, wherein the step of providing the polymer binding agent includes providing the polymer binding agent selected from the group consisting essentially of at least one of water borne

urethane, acrylic emulsions, water soluble acrylic polymers, water soluble vinyl acetate, acrylic colloids, styrene acrylic resins, styrene acrylic resins solutions, and acrylic copolymer latexes.

13. The method for producing multi-color concrete according to claim 11, wherein the step of mixing includes mixing at least one filler to produce a desired effect.

14. The method for producing multi-color concrete according to claim 11, wherein the step of spraying includes using at least one nozzle to spray the first spray color dispersion under pressure.

15. The method for producing multi-color concrete according to claim 11, further including steps of providing a second pigment water dispersion, providing a second polymer binding agent, and mixing the second pigment water dispersion and the second polymer binding agent to form a second spray color dispersion

16. The method for producing multi-color concrete according to claim 15, wherein the steps of spraying comprise using a plurality of nozzles, wherein at least one nozzle of the plurality of nozzles sprays the first spray color dispersion and at least one nozzle of the plurality of nozzles sprays the second spray color dispersion.

17. The method for producing multi-color concrete according to claim 11, including the step of controlling a color pattern using timers that control the step of spraying.

18. The method for producing multi-color concrete according to claim 17, wherein the step of controlling the color pattern includes spraying in pulses such that sprays of various lengths of time produce a desired pattern.
19. The method for producing multi-color concrete according to claim 11, wherein the step of spraying includes using at least one nozzle having a desired flow pattern.
20. The method for producing multi-color concrete according to claim 11, wherein the step of spraying including use of at least one nozzle includes using at least one nozzle that produces a pattern selected from the group consisting of a solid cone, a hollow cone, or a flat spray.
21. The method for producing multi-color concrete according to claim 11, wherein the step of spraying includes spraying in the form of a stream.
22. The method for producing multi-color concrete according to claim 11, wherein the step of spraying includes varying the distances between the at least one nozzle and the wet concrete mix.
23. The method for producing multi-color concrete according to claim 11, wherein the step of providing a pigment water dispersion includes providing a pigment in a range of about 2% to about 60%.

24. The method for producing multi-color concrete according to claim 11, wherein the step of providing the polymer binding agent includes providing the polymer binding agent in a range of about 1% to about 60%.

25. A system for coloring concrete, comprising:

- (a) at least one vessel containing a spray color dispersion, said spray color dispersion comprising a pigment water dispersion and at least one polymer binding agent, the at least one polymer binding agent capable of reacting with wet concrete mix to form an irreversible integral structure of the pigment and the concrete;
- (b) a spray gun associated with each vessel, each spray gun connected to its associated vessel by a conduit;
- (c) a pump associated with each vessel to move the spray color dispersion contained in the vessel to the spray gun associated with the vessel;
- (d) an apparatus for moving fresh concrete relative to each spray gun; and
- (e) a controller for controlling spraying of the spray color dispersion in each vessel through each spray gun.